

2021 Aquatic and Riparian Restoration Annual Report

**USDA Forest Service
Pacific Northwest Region**



USDA Forest Service Pacific Northwest Region 2021 Aquatic and Riparian Restoration Annual Report

Despite the restrictions associated with the pandemic and another major fire year, aquatic restoration practitioners on the National Forests within the Pacific Northwest Region of the USDA Forest Service, in coordination with numerous partners, accomplished an impressive amount of meaningful aquatic and riparian restoration in 2021. Forest Fisheries Biologists and Watershed Specialists on each Forest in the Pacific Northwest Region provided a sampling of their favorite projects for you to review. Please contact us if you want more information. Thanks.

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Cover Photo: Relocating the Index-Galena Road (FS Road 63) from the valley bottom of the North Fork Skykomish River on the Mt. Baker-Snoqualmie National Forest.



Columbia River Gorge National Scenic Area Upper Woodard Creek Restoration

Woodard Creek is a tributary on the Washington State side of the Columbia River Gorge that empties into the Columbia just west of Beacon Rock. Historically, Columbia River Gorge tributaries had large amounts of large wood in them which benefitted both fish and wildlife. At the beginning of the last century this amount was greatly reduced from large-scale forest practices.

In 2020, Columbia River Gorge National Scenic Area (CRGNSA) partnered with long-time riparian restoration partner Lower Columbia Estuary Partnership (LCEP) to improve spawning, holding and rearing habitat for federally listed Lower Columbia River (LCR) steelhead and LCR coho (among other species) in an upper section of Woodard Creek by introducing more large wood to the stream in strategic locations.

This project was initially identified, and deemed an Essential Project, in CRGNSA's 2011 Tanner Creek and Hamilton Creek Watershed Action Plan. It was made possible by a grant secured by LCEP from the Lower Columbia Fish Recovery Board.



A helicopter stages logs in Woodard Creek



Large diameter trees with root-wads are placed into the stream channel

The project sourced Douglas fir (16-30" dbh) from a nearby upland stand (137 trees over five 0.5 acre gaps), and another 20 logs from the Eagle Creek fire staged at another location. A helicopter strategically placed 221 pieces of large wood in 6 locations over a 0.7 mile segment of the creek (RM 1.4 to RM 2.1). An additional 20 riparian trees were also felled directly into the stream in those 6 locations to add further stability to the created log jams.

In late winter 2022, 6000 fir seedlings will be planted; mostly by this stretch of creek, with a portion to be planted in the upland area where most of the fish logs were sourced.

Future restoration work at Woodard Creek includes planning for a valley bottom reconnection (Stage 0) project immediately downstream from this current large wood project.

For more information about this and other projects in the Scenic Area, contact: Brett Carre, Area Fish Biologist (541-308-1718, brett.carre@usda.gov), Diane Hopster, Area Hydrologist (541-308-1732, diane.hopster@usda.gov), and Sarah Callaghan, Area Botanist (541-308-1717, sarah.callaghan@usda.gov).



Strategically placed log structures



Log complex placed in Woodard Creek.

Colville National Forest Mill Creek A to Z

The Mill Creek A-Z project is a unique stewardship contract in which the contractor was responsible for all elements of a whole watershed restoration project. This year, the contractor, Vaagen Brothers Lumber, implemented 6 aquatic organism passage projects and one large woody debris enhancement project.

A new bridge replaced the culvert at Mill Creek as seen in the pictures (below), and open arch culverts replaced the

culverts on Hanson, Jacobsen, Marble and North Fork Mill creeks and North Fork Mill Creek tributaries. Finally, 1/3 of a mile of North Fork Mill Creek was treated with large wood placement.

For more information on the aquatic restoration projects on the Colville National Forest, contact Karen Honeycutt, Forest Natural Resources Staff Officer (509-684-7224, karen.honeycutt@usda.gov).



New stream simulation crossing



Large wood placement



Pre-project impassable culvert at Mill Creek



Post-project new Bridge over Mill Creek

Deschutes National Forest Upper Little Deschutes Restoration

In 2021, the Deschutes National Forest implemented the Upper Little Deschutes Restoration Project to help return the watershed to a properly functioning condition while improving Threatened Oregon spotted frog habitat.

Stream work included heavy equipment installation of log jams designed to mimic large beaver dams on the main channel and manual labor installation of beaver dam ana-

logs on smaller side channels. These structures were placed in strategic locations where water would inundate previously dry relic channels, low areas, and old oxbows, creating wetland habitat. The newly formed wetland areas will have numerous benefits for many aquatic and wildlife species.



This work is being closely monitored to measure restoration success. Monitoring includes water level and temperature, permanent photo points, extensive species surveys, and drone surveys.

Specific Accomplishments of this Project Include:

- 26.6 miles (80 acres) of road obliteration or road drainage improvement to reduce sedimentation.
- 350 acres of riparian encroachment removal.
- 7 miles (128 acres) of stream channel restoration.
- 19 (43 acres) stream sites restored
- Removal of user-created bridge
- 0.5 miles of an illegal ditch reconfigured and obliterated

The Upper Little Deschutes Restoration Project wouldn't have been successful without the help of our numerous partners including: US Fish and Wildlife Service, Oregon Department of Fish and Wildlife, Rocky Mountain Elk Foundation, Mid-State Electric, Central Oregon Intergovernmental Council, Oregon Hunters Association, Oregon Department of Water Resources, local community members, and local community organizations.

For more information about this project, contact Kyle Wright, District Hydrologist (541-433-3262, kyle.wright2@usda.gov) or Jason Gritzner, Forest Hydrologist a(541-383-5537, jason.gritzner@usda.gov). For information about other aquatic restoration projects, Jason Wilcox, Forest Fisheries Biologist (541-383-5534, jason.wilcox@usda.gov).



Pre-project Illegal diversion ditch



An excavator fills an illegal diversion

Fremont-Winema National Forest Wood River Valley Restoration

Crane Creek and Threemile Creek are both located in the Wood River Valley, north of Upper Klamath Lake in Klamath County, Oregon. Threemile Creek headwaters originate on the Fremont-Winema National Forest and is home to one of the few remaining bull trout populations in the Upper Klamath Basin. Threemile is a tributary to Crane Creek and their confluence is located downstream of National Forest lands on private ground. Both Threemile and Crane Creeks had been straightened and leveed for irrigation use over the last century, limiting habitat quality and connectivity for bull trout. After years of planning and prepping and the completion of upstream work on National Forest lands, 2021 marked the construction of the restored Threemile and Crane Creek channels.

In addition to the channel work, a transfer of all irrigation withdrawals to instream flow occurred. Over 2 miles of channel was reconstructed, and the old straightened ditches were filled. The project will provide improved habitat for bull trout and redband trout, as well as other native fishes such as dace and lamprey. The area is also home to populations of Oregon spotted frog, which will also benefit from the many shallow swales and vegetated side channel habitat. As an added bonus, there are active beaver adjacent to the project site and we look forward to seeing their impacts as they move into the project area over the next few years.



Crane Creek Before Restoration



Crane Creek After Restoration



Clark Creek Before Restoration



Clark Creek After Restoration

Trout Unlimited completed this project with partnership and support from many agencies and individuals, including USFS which provided project level support and various types of funding for design and implementation, including RAC and Bring Back the Natives . Other partners include USFWS, NRCS, ODFW, OWRD, USBR, The Klamath Tribes, OWEB, NFWF, BLM, and private landowners. Monitoring of fish populations, hydrology, Oregon spotted frog, and vegetation will occur for at least the next 5 years

and it is anticipated that streamside vegetation will recover quite quickly with the planned riparian planting. For more information on this project contact Rich Pyzik, Eastside Fish Biologist (541-943-4440, richard.pyzik@usda.gov) or Tony Longacre Eastside Aquatics Technician (541-947-6330, tony.longacre@usda.gov).

For other aquatic restoration projects on the Fremont-Winema Forest, contact Bill Bair, Forest Fish Biologist (541-783-4001, William.baer@usda.gov).

Gifford Pinchot National Forest Cispus River-Yellowjacket Creek Restoration Project, Phase I

Partnership and collaboration are key to improving watershed function on the Gifford Pinchot National Forest. The Forest is currently partnering with The Cowlitz Indian Tribe to improve salmon and steelhead habitat for Threatened coho, Chinook and steelhead in the Cispus River and Yellowjacket Creek, tributaries to the Cowlitz River.

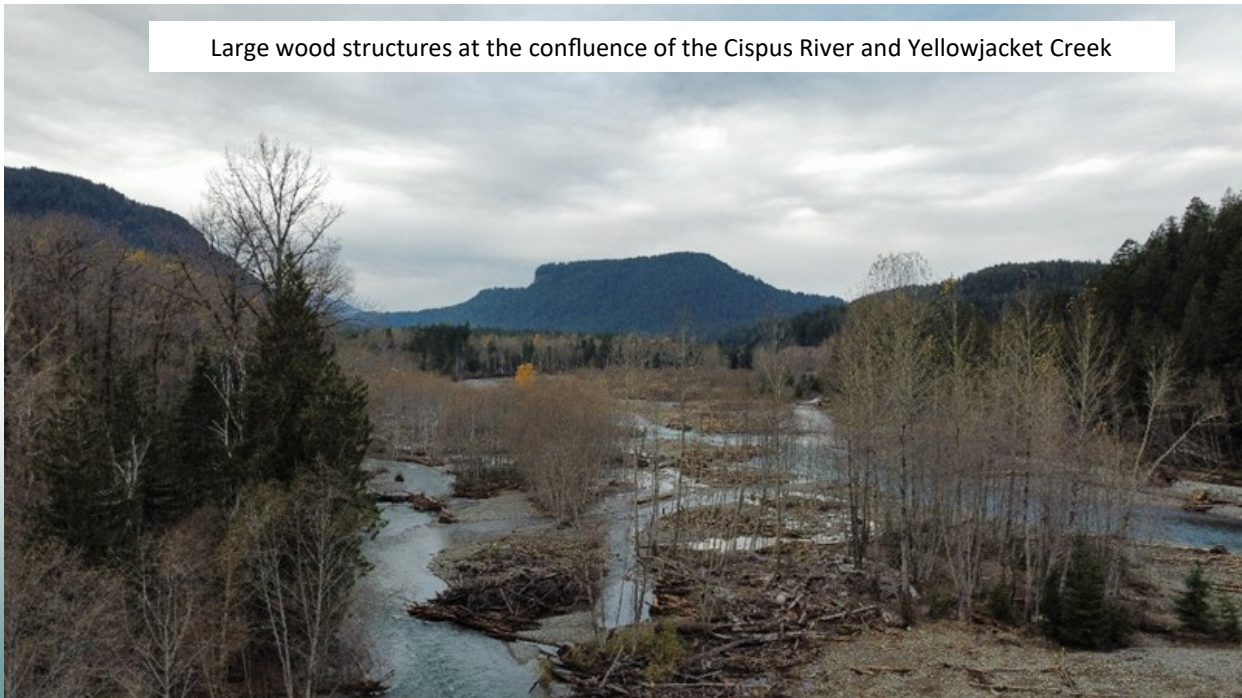
Minimal high quality side channel spawning and rearing habitat exists in the Cispus River and Yellowjacket Creek. The project area falls short of its natural fish production potential due to natural, and human-caused disturbance. Major natural events have affected the Cispus River watershed, including ash from the 1980 eruption of Mount St. Helens, widespread turn-of-the-century fire, and multiple flood events. Past land management practices focused on timber production as it harvested much of the available standing large trees up to river's edge and removed wood from stream channels.

The Cispus River-Yellowjacket Creek Restoration Project, Phase I is the first of a series of planned stream

restoration projects in the Camp Creek-Cispus River and Yellowjacket Creek priority subwatersheds. Phase I restored a half mile section by adding 18 large complex wood structures at the confluence of the Cispus River and Yellowjacket Creek.

The engineered log jams are embedded 20 feet into the river bed and rise another 10 feet above the water surface as layers of large wood and slash. Much like a naturally formed log complex, the structure is backfilled with river substrate and planted with native trees by Cascade Forest Conservancy volunteers, to help hold them in place. The construction sequence is meant to mimic the decades of natural channel evolution that occurs when debris and sediment to collect around a giant fallen log, resulting in healthy, functioning floodplains and riparian forests. Some short-term response of engineered log jams will shift the river channel slightly, re-establish side channels, and create pools of deeper, cooler water where fish can survive and find refuge during periods of warming or floods.

Large wood structures at the confluence of the Cispus River and Yellowjacket Creek



The project will provide quality spawning, summer rearing and overwintering habitat. Engineered log jams also provide high-quality hiding cover and increased residual pool depths in the main stems and re-activated side channels. Habitat in this reach can be utilized by Chinook, Coho, and Steelhead. In addition, the project will improve water storage and hyporheic exchange, lower summer stream temperatures, and build resiliency to impacts of climate change, including increased magnitude of flood events, lower summer flows, and increased thermal pressure.

Large log jams are necessary for structures to stay in place, with yearly discharge in the Cispus River

above the Yellowjacket confluence reaching about 15,000 cfs; with 28,000 cfs the current gaged maximum. Approximately 18 log jams (90-150 logs each, 1,200 logs with root wads total) were added to the stream channel, side channels, and associated floodplain of the Cispus River and confluence with Yellowjacket Creek.

Project implementation took place during summer of 2020 and 2021 and project cost was well over \$2,000,000. Funding was primarily from the Lower Columbia River Salmon Recovery Fund, with the Forest Service contributing retained receipts funding and trees for the project.

Large wood structures at the confluence of the Cispus River and Yellowjacket Creek



For more information on this project, contact Ken Wieman, Fisheries Biologist (360-977-1141, Kenneth.wieman@usda.gov). On other aquatic restoration projects on the Gifford Pinchot National Forest, please contact J.D. Jones, Fisheries Program Manager (360-891-5106, Joshua.d.jones@usda.gov) or Kate Day, Forest Hydrologist (509-675-0075, kate.day@usda.gov).

Malheur National Forest Tinker Creek Headwaters Restoration

The Tinker Creek Headwaters Restoration Project collaboratively improved connectivity to, and quality of, Middle Columbia River steelhead juvenile rearing habitat. The headwaters of Tinker Creek, a 4th order tributary of the John Day River, is designated as Critical Habitat for Threatened Mid-Columbia steelhead, and also provides habitat for redband and westslope cutthroat trout, Region 6 Sensitive species.

Historical beaver presence was evident and, at one time, beaver likely contributed to a diversity of stream habitats and a highly connected floodplain throughout the headwaters. Since then, the stream channel in the project reach cut down through its wide valley bottom and was confined in a narrow, inset floodplain. This channel incision caused a subsequent drop in the water table which resulted in a small riparian area and allowed lodgepole pine to encroach onto the historical floodplain. In addition, there was limited instream wood in the stream and beaver presence is ephemeral. Combined, these factors negatively affected many important stream processes, including water and sediment storage

capacity, late season flows, and flood energy dissipation, negatively affecting fish habitat.



Beaver dam analog installation

Grazing management had also proven difficult in recent years. Livestock are drawn to the green forage and water in the valley bottom during hot summer months. The permittee requested the USFS place large wood throughout the floodplain to help them dissuade cattle from loafing there.

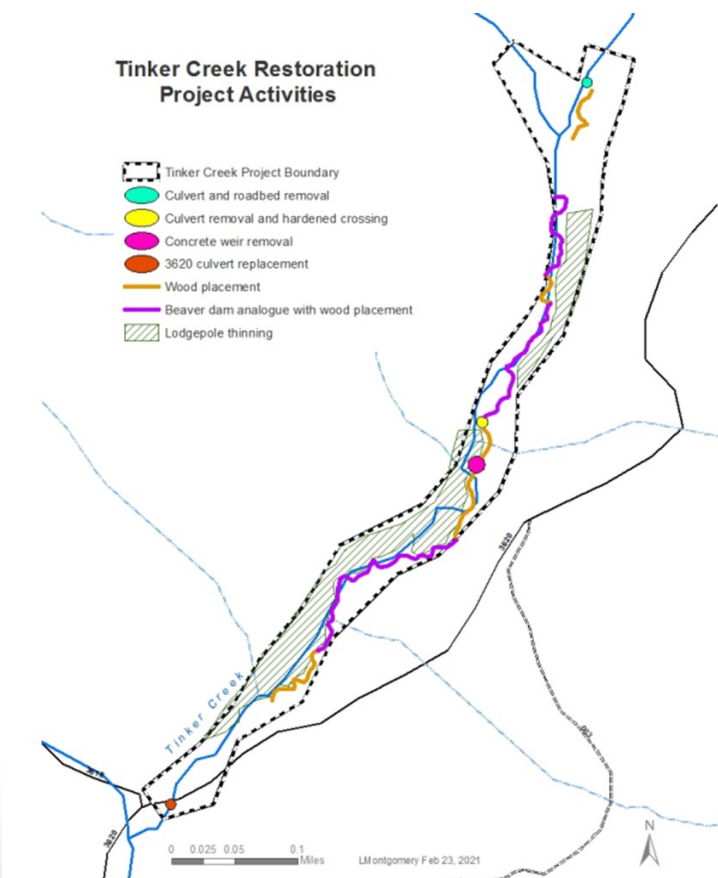


Secondary structures along reconnected the floodplain where historic railroad grade was removed. These will prevent head cutting of future side channels.

Additionally, Blue Mountain Ranger District and their partners have been incrementally addressing fish passage throughout this watershed. After many years of work, only four known passage barriers remained on USFS managed land between this headwater reach of Tinker Creek and the John Day River. Three of these barriers were in this reach of Tinker Creek, and one was downstream on East Fork Beech Creek (replaced with an AOP in 2021).



Tinker Creek culvert barrier pre project



Tinker Creek post project

For more information on this project, contact Dan Armichardy, Blue Mountain Ranger District Fisheries Biologist (541-575-3391, daniel.armichardy@usda.gov). Regarding other aquatic restoration projects within the Malheur National Forest, please contact Lindsay Davies, Fisheries Program Manager (541-575-3474, lindsay.davies@usda.gov).

Mt. Baker-Snoqualmie National Forest Index-Galena Road Decommissioning and Relocation

The Index-Galena Road (FSR 63) near the town of Index and State Highway 2 is an important route accessing the upper North Fork Skykomish River and sections of Wild Sky Wilderness as well as parcels of private property. However, a large section of the road length occurs in the valley bottom so is prone to flooding. In 2006 a large flood event washed out the road at mile post 6.4 – 6.9 causing a side channel of the river to avulse and occupy the former road location. Large segments of the old asphalt roadbed remained within the channel.

The repairs are led by Snohomish County Engineers and Environmental Planners (NEPA, design, permitting and construction) with oversight from Mt. Baker-Snoqualmie National Forest. The project balances the need for public and administrative access with restoration of floodplain and stream channel processes. The new road occurs largely outside of NF Skykomish River 100-year floodplain and channel migration zone, allowing for more natural fluvial and riparian processes. Reducing anthropogenic changes to fluvial and riparian processes is important for both water quality and salmonid habitat.



FSR 63 just after 2006 flood and washout. The avulsed side channel can be seen occupying the old roadbed.



Location of the FSR 63 relocation prior to construction. The relocation starts along FSR 6320.

The federally listed fish occurring in the project area are Puget Sound Chinook, Puget Sound steelhead, and Coastal/Puget Sound bull trout, with critical habitats designated for Chinook and bull trout, and critical habitat proposed for steelhead. These three species and their designated or proposed critical habitats are in the North Fork Skykomish River downslope of project activities.

Construction began in April 2021 and is expected to continue through October of 2023. The road decommissioning portion has been completed with a majority of the asphalt and human created structures within the channel removed during the summer of 2021.

Construction of the new section of road is expected to continue through 2023 and includes a 180-foot bridge to allow for fish passage to a tributary of the NF Skykomish and its associated wetland.

The county's budget for construction is \$20 million with funds provided by US Dept. of Transportation – ERFO and FLAP. Other funding included Washington State Road Administration Board Rural Arterial Program Funds and Snohomish County Road Funds. The partnership between the County, State, US Dept. of Transportation and MBS NF was critical in achieving project goals. An additional \$8 million was spent on project planning, including an environmental analysis for which a decision was signed in 2017.

One mile of road within the floodplain has been decommissioned with asphalt, rebar and culverts among

the waste that was hauled away. The new re-route will allow for access to the North Fork Skykomish area including both the Wild Sky Wilderness and private cabins. The project has allowed for public access while reducing anthropogenic impacts to both water quality and fish habitat by removing a road from both an active channel and 100-year floodplain.

For more information on this project and other aquatic restoration projects on the Mt. Baker-Snoqualmie National Forest, contact Richard Vacirca, Fisheries Program Manager (425-783-6040., Richard.vacirca@usda.gov).



Looking downstream from active new construction area back along old roadbed location. Asphalt, rebar, and other structures have already been removed from the channel. BMPs to reduce sediment transport can be seen.

Mt. Hood National Forest Zigzag River Restoration

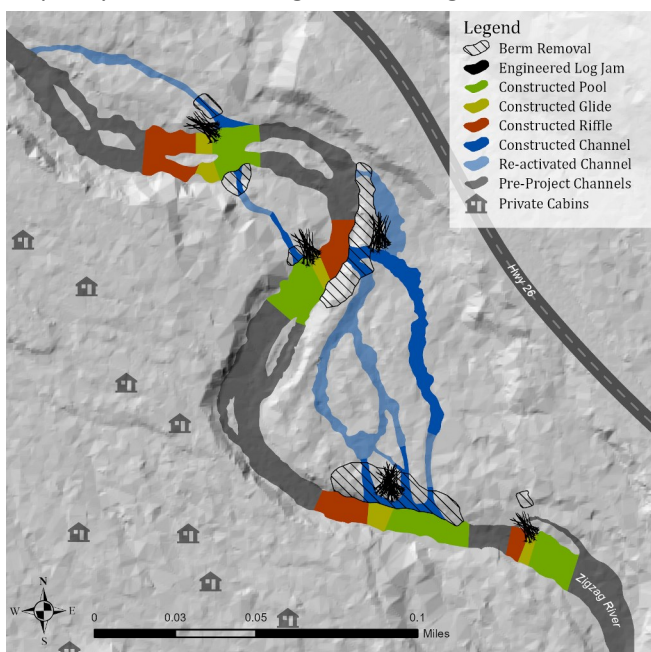
The Zigzag Ranger District partnered with The Freshwater Trust (TFT) to restore and enhance fish habitat on the Zigzag River between river miles 3.1 and 3.4. The Zigzag River is a 6th field tributary to the Sandy River and provides vital spawning and rearing grounds for threatened Lower Columbia River (LCR) Chinook, LCR coho, LCR steelhead, and Pacific lamprey.

Following the historic 1964 Christmas Flood, the US Army Corps of Engineers built a series of berms along the Zigzag River, restricting the river from accessing its historic floodplain. These actions, along with a history of large wood removal and unnatural confinement due to the adjacent Highway 26, have led to increased channel velocities, heightened channel incision, and a simplified channel dominated by boulder and large cobble riffles at a constant 2-3% grade. Furthermore, due to a history of logging, road construction, and recreational development in the adjacent areas, the project site has a limited capacity for channel migration or large wood recruitment.



Large wood structures

This year's work completed the first phase of a two-year project focused on reconnecting floodplain habitats and increasing main channel diversity to provide enhanced spawning and rearing opportunities for native fish. The project posed several unique challenges due to its occurrence within a FEMA regulated floodway, as well as its proximity to Highway 26 and multiple private recreational cabins.



Spring Chinook Spawning post restoration

For more information, please contact Matt DeAngelo, Zigzag Ranger District Fish Biologist (503-622-2003, matthew.deangelo@usda.gov). For information on other aquatic restoration projects on the Forest, contact Bruce Zoellick, Fish Program Manager (208-922-5547, bruce.zoellick@usda.gov) or Todd Reinwald, Forest Watershed Program Manager (541-308-1732, todd.reinwald@usda.gov).

Ochoco National Forest Headwaters Trout & Foley Creeks

In 2021, the Ochoco National Forest, Lookout Mountain Ranger District, continued a multi-year restoration project in the Headwaters Trout Creek and Foley Creek subwatersheds. The primary goals of the project are to improve steelhead and redband trout spawning and rearing habitat in six tributaries on the Forest, by increasing large wood, and subsequently pools and spawning gravels as well as localized floodplain construction in key locations. Several miles of implementation with heavy equipment and chainsaws were planned for the summer of 2021 but due to unprecedented early Industrial Fire Precaution Level (IFPL) fire restrictions put in place on the Ochoco National Forest, none of the large restoration work was implemented. Project managers found a creative way to try and get some of the work done utilizing a Youth Conservation Corps (YCC) crews armed with hand tools during the time when IFPL 4 restrictions were in place. YCC crews dug in previously felled conifers into key places along sections of Potlid Creek that were inaccessible to heavy equipment.

Forest Service specialists are engaging with regulators to get variances for the in-water work period in order to try



Youth Conservation Corps crew members burying large wood into the banks of Potlid Creek.

and avoid future IFPL fire restrictions during the 2022 implementation period. Funding for this project was provided primarily from Portland General Electric Pelton-Round Butte Dam upstream mitigation funding, Oregon Watershed Enhancement Board grant funds, U.S. Fish and Wildlife Foundation Bring Back the Natives Grant funds, and USFS appropriated funds.

For more information about this project on the Ochoco National Forest, contact Jon Kochersberger, District Hydrologist (541-416-6486, jona-than.kochersberger@usda.gov) or Garry Sanders, District Fisheries Biologist (541-416-6485, thomas.sanders@usda.gov).



Riparian hardwood release sprouting one year after thinning conifers

Okanogan-Wenatchee National Forest Skinney Creek Restoration

Skinney Creek is a tributary to Chiwaukum Creek, along Highway 2, about 20 miles west of Leavenworth, WA. Railroad and highway construction in the early 19th century pushed Skinney Creek into a bermed ditch-like channel between the old highway prism and the new highway. Additionally, during the highway realignment in 2013, several notched log weirs were installed as grade control structures on Washington Department of Transportation land, just downstream of the FS boundary. The log weirs were poorly designed and undersized for the stream which has led to failure and the creation of fish barriers. Despite the obvious degraded nature of the stream habitat, Skinney Creek continued to support a strong population of steelhead.

Yakama Nation Fisheries approached the Forest Service with the idea of reconstructing Skinney Creek in the footprint of the old highway. This project would include creating a floodplain and various stream channel habitat types through excavation, large wood additions, and removal of legacy log weirs on DOT land.

The project began in June of 2021 with instream work starting in July. Much of the mass excavation and new

channel construction was able to be completed in the dry. Fish removal took almost a week and, in addition to the hundreds of steelhead, we found several bull trout and a Chinook indicating that this project will also help improve conditions for other ESA-listed fish species. Once fish removal was complete, Skinney Creek was placed into a pipe through the entire project length. The excavated materials were placed on top of the piped creek. Once the channel excavation was completed, the stream was diverted from the pipe and into the new channel.

This project converted a half mile of degraded stream channel into a sinuous channel with deep pools, good spawning gravel, and over 500 pieces of large wood. The inset floodplain will allow Skinney Creek to meander and react to changing conditions without the worry of impacting the highway. All of the log weir barriers were removed to allow access to all fish and aquatic organisms. Final revegetation and site rehab was completed during October 2021. Monitoring of the site will continue and will focus on revegetation, channel conditions, and fish use.



Pre Project road encroachment on Skinney Creek



Skinney Creek Channel construction

This project was completed by the Yakama Nation Fisheries Upper Columbia Habitat Restoration Project and the Okanogan-Wenatchee National Forest, with project management by Jason Breidert, Yakama Nation Wenatchee Project Biologist, and Mariah Mayfield, USFS District Fish Biologist. The engineering design and oversight was provided by Inter-fluve and the construction was completed by Kysar and Koistinen.

For more information on this project please contact Maria Mayfield, Zone Fish Biologist, Entiat and Chelan Ranger District (509-784-4620, mariah.mayfield@usda.gov). For overall information regarding the Forest's aquatic and riparian restoration program, contact Molly Hanson, Forest Watershed Program Manager (509-664-9330, molly.hanson@usda.gov).



Post Project meander of Skinney Creek

Olympic National Forest Sitkum Culvert Replacements

The Olympic National Forest and Clallam Conservation District partnered together to replace 2 deteriorating drainage culverts within the Sitkum watershed. The Sitkum is a priority watershed on the Olympic National Forest and has experienced significant sediment delivery from culvert failures attributed to undersized and deteriorating culverts. Consequently, large amounts of sediment have been delivered into tributaries and the mainstem channel of the Sitkum river, which are used by substantial populations of chinook salmon, coho salmon, and steelhead trout. An increase in fine sediment can affect salmon and steelhead spawning and rearing success.

The replaced culverts will decrease the risk of future failures by increasing flow capacity and eliminating the saturation of fill material from corroded pipes. In addition to the 2 culverts replaced in partnership with Clallam Conservation District, 2 more culverts were upgraded in the Sitkum watershed by the forest road maintenance contractor with Title II funding. The project enhanced .8 miles of stream and the total project cost was \$507,659.

For more information on this project or other aquatic restoration projects on the Olympic National Forest, contact Dana Butler, Watershed Program Manager (360-956-2280, dana.butler2@usda.gov).



Culvert pre-project



Culvert post-project

Rogue River-Siskiyou National Forest Cow Creek AOP

West Fork Cow Creek Aquatic Organism Passage (AOP) project was completed during the in-stream work season of 2021, located on Powers Ranger District, Rogue River-Siskiyou National Forest. The project is located directly downstream of the confluence of the West Fork Cow Creek and Bolivar Creek.



Pre-project culvert outlet

West Fork Cow Creek is a tributary to Cow Creek which is a tributary to the South Fork Umpqua River. This project is within part of the Oregon Coast Coho Salmon ESU and it opened approximately 2 miles of anadromous habitat within the watershed. West Fork Cow Creek provides habitat to coho salmon, Chinook salmon, cutthroat trout, steelhead, Pacific giant salamander, sculpin, dace, reddsides, rough skinned newts, crayfish, and frogs.

The Partnership for the Umpqua Rivers (PUR), The Cow Creek Band of Umpqua Tribe of Indians, private landowners, state and federal agencies developed a habitat restoration plan for the West Fork Cow Creek Watershed in 2016.

The Cow Creek Band of the Umpqua Tribe of Indians was able to secure funding from the NOAA Fisheries-Pacific Coastal Salmon Recovery Fund (PCSRF), providing



Post-project 30' wide open bottom box

\$556,775 for the design, supplies, implementation, and administration of the contract. The project serves as an example of how a collaborative effort among entities can lead to restoration of habitat for native fish species.

For more information about this and other aquatic restoration projects on the Rogue River-Siskiyou National Forest, please contact Steve Burns, Fisheries Program Manager (541-618-2052, stephen.burns@usda.gov) or Lizeth Ochoa, West Zone Soil Scientist and Hydrologist (541-247-3667, Lizeth.ochoa@usda.gov).



Overview of culvert replacement area

Siuslaw National Forest Rover Creek Culvert Replacement

Rover Creek is a low gradient stream that discharges directly in the Pacific Ocean, located south of Cape Lookout in Tillamook County. From its headwaters, Rover Creek passes through Siuslaw National Forest Land before entering the Boy Scouts of America's Camp Meriwether, a privately owned summer camp facility. An undersized and failing culvert located on a private road between the camp and Forest Service land was identified as a high priority fish passage barrier in the Nestucca,

sized and failing culvert to restore 0.75 upstream miles of aquatic habitat access for listed salmonids and to provide stream restoration-focused outreach signs for future camp participants.

The undersized culvert was removed and replaced with a 20' clear span pre-cast concrete modular bridge, restoring access to 0.75 miles of upstream spawning and rearing habitat. Surrounding logs and rootwads that were removed during construction were placed downstream of the project area for stream bank protection and habitat enhancement.

Rover Creek provides 1.5 miles of habitat for ESA listed Oregon Coast coho salmon, steelhead, Chinook, chum, cutthroat trout, and Pacific lamprey. Tidally influenced by the Pacific Ocean, Rover Creek provides important nursery and foraging habitat for marine fish, foraging habitat for opportunistic freshwater fish, and a direct migratory pathway for anadromous fish.



Pre-project Rover Creek culvert.

Neskowin & Sand Lake Watersheds Council's Sand Lake Limiting Factor Analysis (2018) as well as the Salmon SuperHwy's Fish Passage Prioritization. The Siuslaw National Forest Hebo Ranger District worked with the Boy Scouts and local watershed council to replace the under-



Removing Rover Creek culvert.

Overall project success was largely due to the collaboration between the Siuslaw National Forest and its partners, including federal, state, and county agencies, in addition to non-profits and watershed councils. The Siuslaw National Forest conducted initial stream and site surveys, streambed simulation designs, bridge designs, federal permitting, technical assistance during project implementation, as well as funding contributions. The Nestucca, Neskowin & Sand Lake Watersheds Council provided project management and state and local permitting. The US Fish and Wildlife Service provided technical assistance, design review, and funding contributions.

Trout Unlimited provided in-kind oversight and project support. The Oregon Department of Fish & Wildlife provided fish salvage permits and assistance. The Oregon Watershed Enhancement Board provided funding contributions. The Boy Scouts of America Cascade Pacific Council provided in-kind contributions through the use of equipment and labor.

For more information on this project and other aquatic restoration projects on the Siuslaw National Forest, contact Brandy Langum, Fisheries Program Manager (541-750-7034, brandy.langum@usda.gov) or Kami Ellingson, Watershed Program Manager (541-750-7101, kami.ellingson@usda.gov).



Post project bridge replacement of undersized culvert at Rover Creek

Umatilla National Forest North Fork John Day Headwaters Resilience Project

The North Fork John Day tributaries are a top priority in numerous regional plans and assessments. These tributaries contain habitat for ESA listed steelhead, bull trout and Chinook salmon. Many of the North Fork tributaries and their floodplain habitats are in degraded condition due to historic anthropogenic influences including beaver trapping, overgrazing, logging, road building, and wood removal from streams. In 2021, the Umatilla National Forest partnered with Trout Unlimited (TU) and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) to restore 3.03 stream miles and 30 floodplain acres by placing 97 wood jams and approximately 89 whole trees in Camas and North Fork Desolation creeks.

A cost effective, high impact approach to increase floodplain connectivity utilizing minimal equipment was initiated. This involved hand placement of High Density Wood with an objective of reducing hydraulic efficiencies, increasing channel-floodplain connectivity and inundation time, and increasing habitat complexity.



TU hired, trained, and worked with hand crews to implement the project, including a Northwest Youth Corp (NYC), the John Day Basin Conservation Corps, and U.S. Veterans.

Two communication pieces were issued as a part of this project that highlighted the efficiency of this work, educational impact, and to inspire other regions to form similar programs.

For more information on this project contact Kathy Ramsey, Forest Fish Biologist (Katherine.ramsey@usda.gov, 541-278-3933)

Umpqua National Forest Fisheries Crew Accomplishments

During the 2021 field season the Tiller Ranger District fisheries crew completed several aquatic projects, directly benefiting riparian and aquatic habitat and species. The crew of one GS-5 and three interns operated a smolt trap on the South Umpqua River, controlled aquatic invasive species, seined Winchester Bay, and sampled for Pacific Lamprey using eDNA methods.

For 31 years a smolt trap has been operating on the South Umpqua River to monitor anadromous fish populations. The crew continued that effort in 2021. From continuous mark and recapture efforts on salmonid populations, the crew estimated 2021 totals to be 6,684 Chinook age 0, 596 Chinook age 1+, 1,518 Coho age 0, and 207 Coho age 1+.

In an effort to control aquatic invasive species, they removed 1,046 American bullfrog tadpoles from the 3C Campground area, a critical stronghold for the Umpqua chub (*Oregonichthys kalawatseti*), a Region 6 Sensitive species. The concern is the predatory bullfrog has the potential to decimate the chub population.

They cooperated with the local Oregon Department of Fish and Wildlife office, assisting estuary seining in Winchester Bay to compare the growth and health of wild and hatchery salmonids.

From early July through August, the crew completed snorkel surveys for Umpqua chub. Surveying 80 sentinel sites across the Umpqua River Basin and 5 exploratory sites in the South Umpqua and Cow Creek watershed, they enumerated Umpqua chub and predatory/invasive smallmouth bass populations and collected habitat data. These efforts were featured in a post on the Umpqua National Forest Facebook page.

Finally, the crew collected eDNA samples throughout the Umpqua River Basin in support of efforts to map Pacific lamprey (*Entosphenus tridentatus*) distribution.

For more information contact Bob Nichols, Forest Fish Biologist (541-957-3360, Robert.nichols@usda.gov) or Joe Blanchard, Forest Hydrologist (541-957-3356, joseph.blanchard@usda.gov)



Collecting invasive bullfrog in the South Umpqua River.



Seining Winchester Bay with ODFW

Wallowa-Whitman National Forest Middle Fly Creek Large Wood Project

The Wallowa-Whitman National Forest restored 3 miles of Middle Fly Creek, a tributary of the Grande Ronde River by placing 2,400 pieces of large wood with the use of a helicopter. The helicopter transport and placement of the wood took 9 days.

The project occurred in important summer steelhead spawning and rearing habitat and spring/summer Chinook salmon rearing habitat. Redband were also benefitted from the project because they share habitat with those species.



Helicopter placing large wood in Middle Fly Creek.



Large wood placed in Middle Fly Creek by helicopter.

The total cost of the project was \$1,000,000 and project partners included the Grande Ronde Model Watershed and the Bonneville Power Administration.

For More information contact Cecil Rich, Fisheries and Watershed Program Manager (cecil.rich@usda.gov, 541-523-6391) or Sarah Brandy, District Fisheries Biologist (sarah.brandy@usda.gov, 541-962-8590).

Willamette National Forest Finn Rock Restoration Project

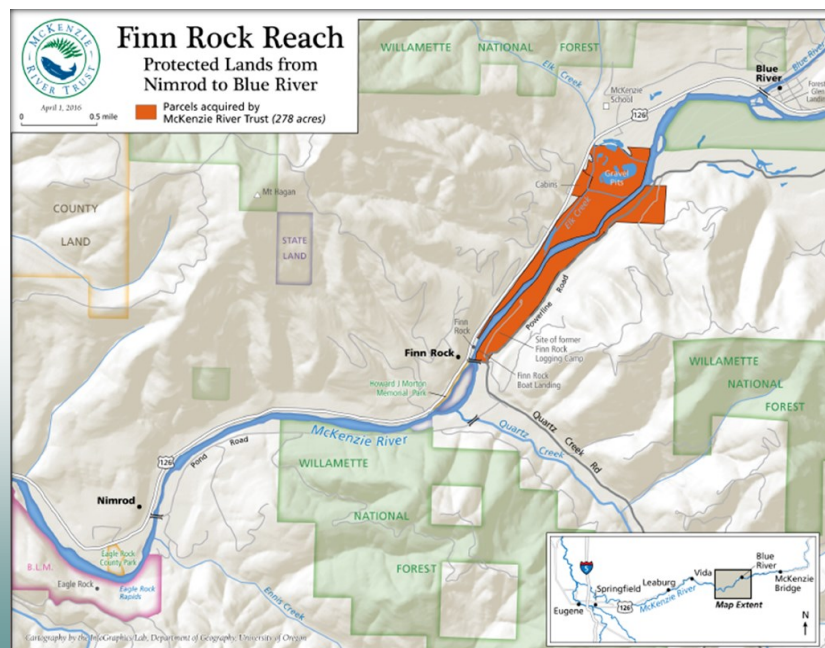
Finn Rock Reach (FRR) is a floodplain property located along the main stem McKenzie River just downstream of the town of Blue River, Oregon. It was purchased in 2016 by McKenzie River Trust (MRT) and Eugene Water & Electric Board (EWEB) with the intent of restoring it for native fish, wildlife, water quality and community benefit. It is also one of several properties in the Middle McKenzie River with high potential for collaborative floodplain restoration by partners. After two successful phases of valley bottom restoration on National Forest land in the Lower South Fork McKenzie River just upstream of Finn Rock, the partnership asked the Willamette National Forest to take the lead on project design and implementation.

Past owners of FRR had logged riparian forests and had operated a gravel mining and crushing operation, leaving a heavily disturbed 10-acre pond in the upper project area. In addition, in fall 2020, the Holiday Farm Fire burned over the 85-acre FRR project area, intensely burning much of its young riparian forest on the terraces of the project area.

The project design was modified to utilize over 1,000 trees that were killed by the fire at FRR as well as hazard trees

removed from a local county wayside park and roads on BLM land, reducing some of the wood haul and placement costs of the project. Forest Service designers used a process-based design to restore the river to Stage 8 (Cluer and Thorne 2013) conditions that sought to create high floodplain connection while working around infrastructure constraints and maintaining navigability in the main stem McKenzie River.

MRT hired BCI Contracting (Portland, OR) to complete Phase 1 that involved excavation and movement of 115,000 cubic yards of floodplain fill material from cut zones of the lower project area and using it to fill portions of the gravel mining pond in the upper project area. Over 1,500 pieces of wood were then placed throughout the new surface to create a roughened channel-wetland complex with benefits for native fish and wildlife such as ESA-Threatened spring Chinook salmon and bull trout, as well as rainbow trout, cutthroat trout, Pacific lamprey, Western pond turtles and Western painted turtles. A second phase of the project will be implemented in 2023, completing 125 acres of floodplain reconnection at Finn Rock Reach.



Lower Finn Rock Reach project area (left) along main stem McKenzie River (right) with wetted floodplain, large wood and islands, forming complex habitat for native fish and wildlife.

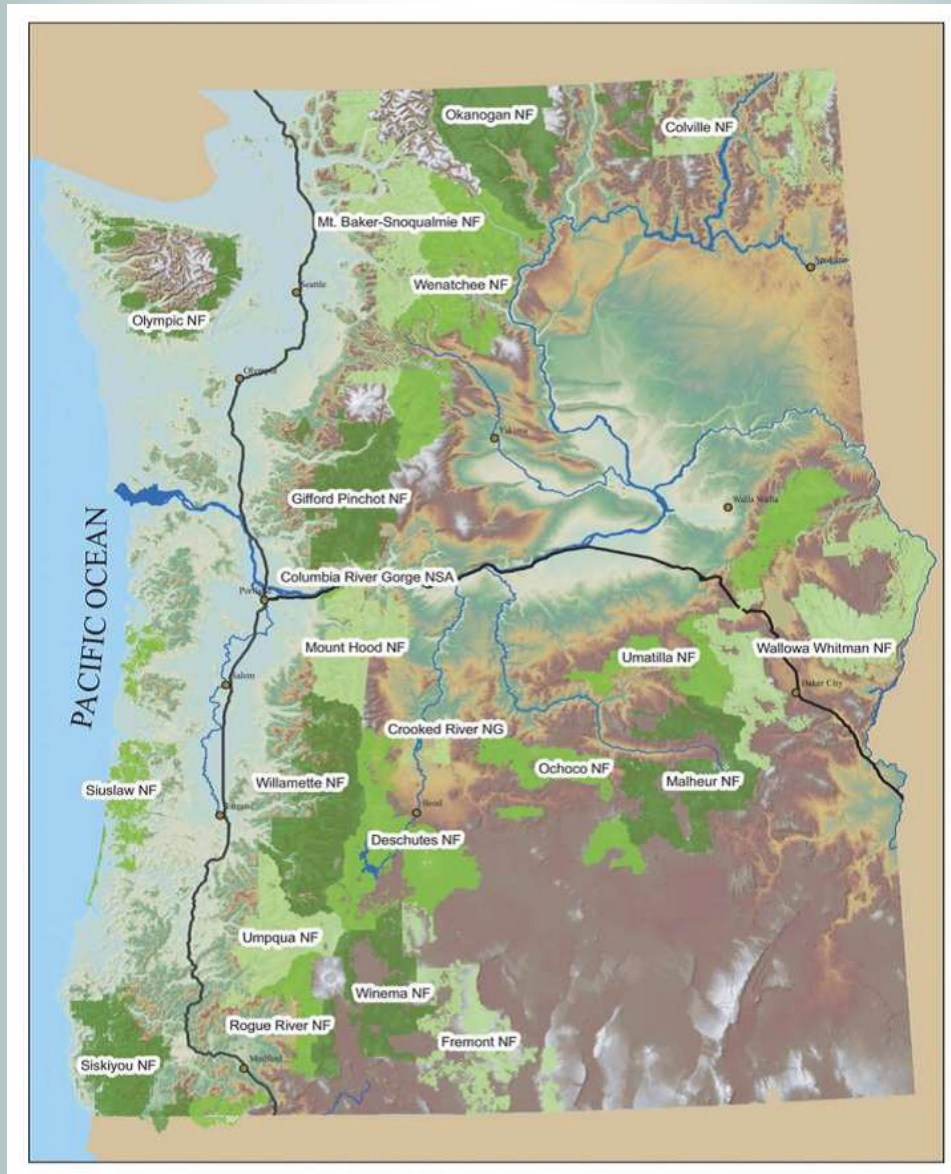


Upper Finn Rock Reach project area with legacy gravel mining pond that is being filled and reshaped to maximize nesting and rearing habitat for Western pond turtles and Western painted turtles.



For more information on this project and other aquatic restoration projects on the Willamette National Forest, contact Johan Hogervorst, Forest Hydrologist, (541-225-6430, johan.hogervorst@usda.gov) and Brett Blundon, Forest Fisheries Biologist (541-225-6439, brett.blundon@usda.gov).

Locations of the National Forest in the Pacific Northwest Region of the USDA Forest Service



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